REMARKS

The office action of September 30, 2009 has been reviewed and its contents carefully noted. Reconsideration of this case, as amended, is requested. Claims 25, 28, 37-38, and 42-55 remain in this case, claims 25, 43, and 44 being amended by the present response. The amendments to claims 25, 43, and 44 are fully supported, for example by page 3, lines 26-34 of the application, as filed.

Attached is a 37 CFR 1.132 Declaration by Bernhard Muellinger ("Muellinger Declaration 2009").

As a preliminary comment, the Applicant does not believe that the patent office has been complying with the principle of compact prosecution in this case.

As stated in MPEP 707.07(g), piecemeal examination should be avoided as much as possible. The Applicant would like to point out that one of the references cited in this office action, Goodman 5,542,410, is essentially the same reference as Goodman 5,813,397, cited by Examiner Dawson in the office actions dated March 9, 2005, November 8, 2005, April 17, 2006, December 7, 2006 and July 17, 2007, albeit a different family member in the Goodman family of continuations. The Applicant overcame the prior art rejections that included Goodman in the office action response dated December 10, 2007, the relevant pages 9-12 being attached hereto as EXHIBIT A. Note that the claim language being argued at that time, "adjusting a respiratory flow or a tidal volume of the inhalation device" is the same as the language in current claims 25, 43, and 44. Although the Examiner has changed, the Applicant believes that the prosecution, as a whole, should be considered by the patent office each time they issue a new office action. The Applicant should not have to essentially repeat many of the arguments they have made in previous office actions because the case has been reassigned to a new Examiner.

As another preliminary comment, the importance of this invention has been discussed throughout prosecution, for example, see the discussion in the office action response dated February 26, 2004 (see page 7, lines 9-17, and page 8, line 11 through page 9, line 11) and in the office action response dated September 26, 2006 (see page 5, lines 7 through 26). The inhalation device according to the present invention is a substantial improvement over conventional

inhalation devices. See also the Muellinger Declaration 2009 being submitted with the present response (for example, paragraphs 23-26).

The Applicant emphasizes the enormous step forward achieved with the present invention. The present invention has been published in well-known and respected journals. The invention has received notoriety as an important and novel discovery. The expert opinion clearly states that "the unique ability of the AKITA to precisely control inhaled volumes and flow rates may further provide for the aerosol to be more efficiently and reproducibly targeted to the regions of the lung most affected by the disease" (*Expert Opin. Drug Deliv.* (2005), vol. 2, iss. 4, p. 766, col. 2, line 16-20, filed in a supplemental IDS on July 11, 2006). Furthermore, in "Lung Deposition after Electronically Breath-Controlled Inhalation and Manually Triggered Conventional Inhalation in Cystic Fibrosis Patients" (*Journal of Aerosol Medicine* (2005), vol. 18, no. 4, pp. 386-395, submitted in a supplemental IDS on July 11, 2006), the improvement of the invention in comparison to manually triggered conventional inhalation devices, like the MDI suggested in Goodman *et al.*, is shown. This is evidence of the novelty of the invention and that it is widely regarded as being at the forefront of technology. Those of ordinary skill in the art recognize the importance of the invention.

Moreover, a clear need for the advantages provided by the claimed subject matter is shown in two publications from two journals relevant to the present technical field. These publications (Journal of Aerosol Medicine, Vol. 14, No. 3, 2001, page 388 and The Aerosol Society: Drug Delivery to the Lungs XII, page 23-26, both submitted with February 26, 2004 office action response) emphasize the advantages that are related to the individualisation of the aerosol inhalation in accordance with the present invention. It is now possible with the claimed invention to provide a pinpointed and more efficient deposition of the drug in the lung, which, in turn, comes along with a decrease of the amount of the necessary drug, which results in a substantial reduction in costs.

In the prior art, it was impossible to adjust an inhalation device individually to the specific needs of a specific patient and to an individual drug. This is now possible with an inhalation device according to the present invention. The individualization of the deposition of drugs is becoming more and more important.

As far as the Applicant knows, the present invention was the first to introduce individualized inhalation. A much more optimized inhalation of an aerosol is obtainable if the respiratory flow and the tidal volume are individually selected for the specific patient. Thus, with the inventive inhalation device, controlled inhalation is provided with high accuracy: the drug indeed reaches the target area in the lung. Such a controlled and targeted inhalation has not been achieved in the art prior to the Applicant's invention.

Drawing Objections

2. The drawings were objected to because they include reference character 18, which is not mentioned in the specification.

The specification has been amended to overcome this objection. More specifically, the mouthpiece is now labeled as 18. No new matter has been added. Reconsideration and withdrawal of the objection are respectfully requested.

Rejections under 35 U.S.C. §112

5. Claims 25, 28, 38, and 42-55 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Although the Applicant respectfully disagrees with this rejection, claims 25, 43, and 44 have been amended to overcome this rejection.

More specifically, claims 25, 43, and 44 have been amended to read "a predetermined amount of aerosol deposition", which is fully supported by the application as filed. Reconsideration and withdrawal of the rejection of claims 25, 28, 38 and 42-55 are respectfully requested.

Rejections under 35 U.S.C. §103

8. Claims 25, 28, 38, 42-44 and 49 were rejected under 35 U.S.C. 103(a) as being unpatentable over Brand (6,606,989) in view of Brooker (6,269,810) taken together with Goodman et al. (5,542,410). Applicant respectfully disagrees with this rejection.

In the previous office action, the Examiner rejected claims 24, 25, 28, 38 and 42-44 under 35 U.S.C. 102(e) as being anticipated by Brooker (6,269,810) and rejected claims 24, 25, 28, 38-

40 and 42-44 under 35 U.S.C. 103(a) as being unpatentable over Brand (6,606,989) in view of Brooker. Since the Examiner has not repeated these rejections in this office action, the Applicant's last response must have overcome these rejections. To avoid repetition, the Applicant is not repeating the arguments made with respect to the differences between the claims and Brand and Brooker here. Instead, attached as EXHIBIT B are the relevant pages 8-12 and 15-17 of our office action response dated June 19, 2009, which include the arguments in response to the anticipation rejections over Brooker and the obviousness rejections over Brand in combination with Brooker.

As amended, independent claim 25 claims, in part, "individually adjusting the inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters to obtain a predetermined amount of aerosol deposition in a lung of the patient, comprising the substeps of: evaluating the inhalation parameters for the inhalation and adjusting a breathing maneuver of the patient according to capabilities of the patient by adjusting a respiratory flow or a tidal volume of the inhalation device based on the inhalation parameters such that an optimal dose of at least one active ingredient of at least one aerosol is applied to a desired section of the lung of the patient during the controlled inhalation" (emphasis added). Amended claims 43 and 44 similarly claim "individually adjusting the inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the individual patient parameters to obtain a predetermined amount of aerosol deposition in a lung of the patient, comprising the substeps of: evaluating the individual patient parameters for the inhalation; and adjusting a breathing maneuver of the patient according to capabilities of the patient by adjusting a respiratory flow or a tidal volume of the inhalation device based on the individual patient parameters such that an optimal dose of at least one active ingredient of at least one aerosol is applied to a desired section of the lung of the patient during the controlled inhalation" and "individually adjusting the inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the aerosol parameters to obtain a predetermined amount of aerosol deposition in a lung of the patient, comprising the substeps of: evaluating the aerosol parameters for the inhalation; and adjusting a breathing maneuver of the patient according to capabilities of the patient by adjusting a respiratory flow or a tidal volume of the inhalation device based on the aerosol parameters such that an optimal dose of at least one

active ingredient of at least one aerosol is applied to a desired section of the lung of the patient during the controlled inhalation", respectively (emphasis added).

As discussed in the last office action response, attached as EXHIBIT B, Brand does not teach or suggest individually adjusting an inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the individual patient parameters or the aerosol parameters to obtain a predetermined amount of aerosol deposition in the lung. Brand also does not teach or suggest adjusting a breathing maneuver of a patient according to capabilities of the patient by adjusting flow rate or tidal volume based of an inhalation device on the individual patient parameters or the aerosol parameters.

The Applicant would also like to draw the Examiner's attention to Dr. Peter Brand's declaration dated August 5, 2008, submitted with the office action response dated August 15, 2008 and attached here as EXHIBIT C. The Applicant respectfully points out that Dr. Brand is one of the inventors of the Brand reference. In addition to other statements, Dr. Brand states in his declaration that Brand does not teach or suggest adjusting flow rate or tidal volume based on inhalation parameters (Brand Declaration dated August 5, 2008, paragraph 11).

Additional evidence of the differences between Brand and the claims can also be found in the Muellinger Declaration dated July 17, 2008 (EXHIBIT D, see paragraphs 22-30).

The Applicant also respectfully notes that, in the last office action dated March 20, 2009, the Examiner "agrees with Bernhard Muellinger's declaration dated July 17, 2008 and submitted August 15, 2008, that Brand does not teach or suggest individually adjusting an inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters and Brand does not teach or suggest adjusting flow rate or tidal volume based on inhalation parameters." (Office action dated March 20, 2009, page 11, lines 17-21).

Regarding claims 25, 43, and 44, Brooker does not provide what Brand lacks. More specifically, Brooker does not teach or suggest individually adjusting an inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters to obtain a predetermined amount of aerosol deposition in the lung of a patient.

Brooker does not teach or suggest adjusting flow rate or tidal volume of the inhalation device based on the individual patient parameters or the aerosol parameters.

Examiner Dawson rejected the claims as anticipated by Brooker in an office action dated April 11, 2003. The Applicant overcame this rejection in a response dated October 16, 2003, relevant pages 6-7 of the response are attached herein as EXHIBIT E. In the next office action dated December 31, 2003, Examiner Dawson stated, with respect to a 103 rejection of many of the claims in the case at that time, "Brooker discloses the invention as claimed with the possible exception of the adjusting of a respiratory flow or tidal volume of the inhalation device" (Office action dated December 31, 2003, page 3, lines 15-16). The Applicant overcame the 103 rejection in a request for continued examination dated May 27, 2004, the relevant arguments (pages 6-7) are attached herein as EXHIBIT F. In a subsequent office action dated September 8, 2004, Examiner Dawson found the claims allowable over the prior art, which included Brooker. Applicant acknowledges that the claim language of the claims at this earlier stage in prosecution differed from the claim language in the current claims. However, the step of adjusting a respiratory flow or tidal volume of the inhalation device, which was part of the claims at that time, is still part of the current claims.

In response to the arguments made in the response dated August 15, 2008, as well as Mr. Muellinger's July 17, 2008 declaration, the Examiner states "[s]ince the adjusted pulse would make up a portion of the respiratory flow or the tidal volume, and given that tidal volume is the lung volume representing the normal volume of air displaced between normal inhalation and exhalation when extra effort is not applied, the adjustment of the pulse would adjust the respiratory flow or tidal volume (at least to some extent)" (office action dated March 20, 2009, page 11, lines 12-16, see also page 8, lines 7-12). Applicant agrees that the adjusted pulse would make up a portion of the tidal volume as it is the first part that is inhaled, as mentioned in column 6, lines 17 to 24 of Brooker. Even accepting that the adjusted pulse would make up a portion of the tidal volume, however, it cannot be concluded that adjustment of the pulse would adjust the tidal volume to any extent. In Brooker, the adjusted pulse (volume) cannot adjust the tidal volume as the tidal volume in Brooker is determined by the way the patient breathes. If the patient does not breathe regularly but has an irregular breathing pattern, the tidal volume for each breath is different despite having an adjusted pulse volume. In addition, the adjusted pulse would

not make up a portion of the respiratory flow as it is just a volume aerosol and not a "flow". Thus, the Applicant respectfully submits that the Examiner's statement above is incorrect. Specifically see also paragraphs 10-12 of the Muellinger Declaration 2009.

The Applicant would also like to draw the Examiner's attention to the Declaration by William C. Zimlich, Jr. dated August 1, 2008, submitted with the office action response dated August 15, 2008, and attached as EXHIBIT G. Mr. Zimlich is an inventor on the Brooker patent and states that Brooker does not teach or suggest the step of adjusting a respiratory flow or a tidal volume of an inhalation device (see paragraphs 10-21).

Additional evidence of the differences between Brooker and the claims can be found in the Muellinger Declaration dated July 17, 2008 (EXHIBIT D, see paragraphs 10-21).

Regarding claims 25, 43, and 44, Goodman does not provide what Brand and Brooker lack. Goodman does not teach or suggest adjusting flow rate or tidal volume of an inhalation device using individual patient parameters or aerosol parameters.

The Applicant respectfully notes that there are arguments on the record regarding the differences between the claims and Goodman (5,813,397), which is a continuation of Goodman (5,542,410). Goodman (5,542,410) and Goodman (5,813,397) appear to have almost identical disclosures. For examples that specifically explain that Goodman (5,813,397) does not teach or suggest adjusting tidal volume or respiratory flow of an inhalation device, see Office action responses dated August 30, 2005, February 10, 2006, July 11, 2006, September 26, 2006, May 2, 2007, and December 10, 2007. The rejections over Goodman (5,813,397) were overcome in the December 10, 2007 response (EXHIBIT A), after an interview with the Examiner. As discussed above, the claim language of claims 25, 43, and 44 at the time of the December 10, 2007 response included "adjusting a respiratory flow or a tidal volume of the inhalation device".

In the present office action, the Examiner points to the following passage with respect to the rejection of claims 25, 43, and 44 over Goodman. "Preferably, the apparatus releases one or more pulses at the appropriate points in the patient's inspiratory flow to optimize the deposition of the administered aerosolized medication within the desired loci within the lung. The apparatus also may adjust the controlled amount of medication delivered and/or the particle size in each

dosage of medication delivered in response to detected changes in the patient's pulmonary function." (column 16, lines 36-43). This passage, however, does not teach or suggest adjusting flow rate or tidal volume of an inhalation device using individual patient parameters or aerosol parameters. Instead, it adjusts the amount of medication delivered in response to changes in a patient's pulmonary function.

Tidal volume is the volume of air inhaled and exhaled with each breath. Tidal volume and respiratory flow both relate to air entering and leaving a patient's lungs during a breath. Goodman teaches that "the selected particle size can then be used with an optimal inspiratory flow, inspiratory pause, expiratory flow, and tidal volume to deliver the aerosol medication to the most therapeutically efficacious locations in the patient's airway" (column 34, lines 13-17). Goodman teaches adjusting aerosol delivery based on inspiratory flow, pause, expiratory flow, and tidal volume. Goodman further teaches "[i]t is another object of the invention to deliver aerosolized compounds in response to a measure of a patient's breathing pattern during inspiration. It is another object to select the optimal point or points for release of one or more pulses of medication based on an analysis of the patient's inspiratory flow in a first detected flow and to release the medication on the occurrence of the determined point or points during a subsequently detected inspiratory breath" (column 5, lines 11-17, emphasis added). Goodman "monitor[s] the patient's breath flow patterns…." (column 12, line 39, emphasis added). Goodman also states that it is "capable of autonomously modifying the initial therapy program based on detected progressive changes in the patient's breath flow and corresponding pulmonary functions." (column 6, lines 19-22, emphasis added). Goodman teaches only measuring, analyzing, and detecting respiratory flow and adjusting aerosol delivery based on measured respiratory flow. Goodman does not teach or suggest adjusting respiratory flow or tidal volume and does not teach or suggest adjusting respiratory flow or tidal volume of an inhalation device based on individual patient parameters or aerosol parameters.

Goodman is merely a variable dose inhaler. It still provides a metered dose; the amount of medication in that particular dose just varies from patient to patient. The Applicant knows of no disclosure of adjusting the tidal volume or respiratory flow in Goodman. Note that some of the passages in the patent discuss trying to get the patient to adjust their breathing (for example, see column 32, lines 51-60, "[f]ourth, the determined baseline pattern can be compared to a

preferred ideal breathing pattern for optimal delivery of the medication. If substantial differences are found to exist, which differences might affect the efficacy of the drug, the prompt then could be used to drive the patient's breathing pattern, i.e., to prompt the patient to modify his or her regular 'baseline' breathing pattern to conform more or less to the ideal desired pattern for that medication. Thus, the prompt can improve the efficiency of the drug delivery...." and column 6, lines 4-5, "feedback for prompting the patient to obtain a suitable breathing pattern for delivering a selected medication..."); however, claims 25, 43 and 44 of the present application adjust a respiratory flow or tidal volume of the inhalation device. Goodman does not teach or suggest a method or device that is capable of adjusting a respiratory flow or tidal volume of an inhalation device.

For additional arguments regarding the differences between claims 25, 43, and 44 and Goodman, see paragraphs 14-21 of Muellinger Declaration 2009.

The Applicant respectfully submits that, during the prolonged prosecution of this case, they have successfully argued that no prior art reference that has been cited, including Brand, Brooker, and Goodman (see above for references to the office action responses in which arguments were made regarding Goodman 5,813,397), teaches or suggests individually adjusting the inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters to obtain a predetermined amount of aerosol deposition in a lung of the patient, including the substep of adjusting a breathing maneuver of the patient according to capabilities of the patient by adjusting a respiratory flow or a tidal volume of the inhalation device based on the inhalation parameters such that an optimal dose of at least one active ingredient of at least one aerosol is applied to a desired section of the lung of the patient during the controlled inhalation (emphasis added). With respect to the arguments regarding Brand, see office action responses dated August 15, 2008 and June 19, 2009. With respect to the arguments submitted regarding Brooker, see office action responses dated August 8, 2003, October 16, 2003, May 27, 2004, August 15, 2008, and June 19, 2009.

Brand, Brooker and Goodman, alone or in combination, do not teach or suggest all of the elements of claims 25, 43 and 44. Therefore, it is respectfully suggested that independent claims 25, 43 and 44 are not obvious over Brand in view of Brooker and Goodman. Claims 28, 38, 42

and 49, being dependent upon and further limiting claim 25, should also be allowable for that reason, as well as for the additional recitations they contain. Reconsideration and withdrawal of the rejection are respectfully requested.

8. Claims 45-47 and 50-55 were rejected under 35 U.S.C. 103(a) as being unpatentable over Brand in view of Brooker and Goodman (5,404,871) and further in view of Willemot (5,560,353). Applicant respectfully disagrees with this rejection. The arguments regarding the nonobviousness of claim 25, upon which claims 45, and 50-54 depend, and the arguments regarding the nonobviousness of claims 43 and 44, upon which claims 46 and 47 depend, respectively, over Brand, Brooker and Goodman are repeated herein by reference.

The Applicant respectfully notes that, the Examiner cites "Goodman" as US Patent No. 5,404,871 in this rejection, but cites "Goodman" as US Patent No. 5,542,410 in the earlier rejection. US Patent No. 5,542,410 is a continuation of 5,404,871, and the two patents have almost identical disclosures. Therefore, the arguments above with respect to the differences between the claims and 5,542,410 also apply to 5,404,871.

Regarding amended claims 25, 43, and 44, Willemot does not provide what Brand, Brooker and Goodman lack. More specifically, Willemot does not teach or suggest individually adjusting an inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the individual patient parameters or the aerosol parameters to obtain a predetermined amount of aerosol deposition in the lung. Willemot also does not teach or suggest adjusting a breathing maneuver of a patient according to capabilities of the patient by adjusting flow rate or tidal volume based on the individual patient parameters or the aerosol parameters. Instead, Willemot teaches a system that supplies puffs of gas containing particles of an active product to a patient. This gas is only used to drive the aerosol generation system. The gas does not provide the whole inhalation flow rate or inhalation volume. Willemot teaches a metered dose inhaler. "Breath phases of the patient are sensed for initiating each of the puffs at the correct point in the breath cycle, and for counting the puffs. The sequence of puffs is programmably controlled and the puffs in a predetermined sequence according to a puff sequence program." (Abstract). The system senses breath phases of a patient; it does not adjust them in any way.

Therefore, Willemot does not adjust an inhalation device to a patient by adapting a dosage of at least one aerosol, nor does Willemot adjust flow rate or tidal volume of an inhalation device based on individual patient parameters or aerosol parameters.

The Applicant respectfully notes that, in the office action dated March 20, 2009, the Examiner "agrees with Bernhard Muellinger's declaration that Willemot does not teach or suggest individually adjusting an inhalation device to a patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters and Willemot does not teach or suggest adjusting flow rate or tidal volume based on inhalation parameters." (office action dated March 20, 2009, page 12, lines 17-21).

Brand, Brooker, Goodman and Willemot, alone or in combination, do not teach or suggest all of the elements of claims 25, 43 and 44. Therefore, it is respectfully suggested that independent claims 25, 43 and 44 are not obvious over Brand, Brooker, Goodman and Willemot. Claims 45-47, and 50-55 should also be allowable for that reason, as well as for the additional recitations they contain. Reconsideration and withdrawal of the rejection are respectfully requested.

9. Claim 48 was rejected under 35 U.S.C. 103(a) as being unpatentable over Brand in view of Brooker and Goodman and further in view of Servidio (5,598,838). Applicant respectfully disagrees with this rejection. The arguments regarding the nonobviousness of claim 25, upon which claim 48 depends, over Brand, Brooker and Goodman are repeated herein by reference.

Regarding claim 25, upon which claim 48 depends, Servidio does not provide what Brand, Brooker and Goodman lack. More specifically, Servidio does not teach or suggest individually adjusting an inhalation device to a patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters to obtain a predetermined amount of aerosol deposition in the lung. Servidio also does not teach or suggest adjusting a breathing maneuver of a patient according to capabilities of the patient by adjusting flow rate or tidal volume based on the inhalation parameters. Instead, Servidio teaches a pressure support ventilatory assist device with pressure regulation. Servidio mentions tidal volume; however, the

tidal volume is just an inputted or outputted value, and one of a number of parameters that are measured during use of the device.

The Applicant respectfully notes that, in the office action dated March 20, 2009, the Examiner "agrees with Bernhard Muellinger's declaration that Servidio does not teach or suggest individually adjusting an inhalation device to a patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters and that Servidio does not teach or suggest adjusting flow rate or tidal volume based on the inhalation parameters." (office action dated March 20, 2009, page 12, lines 8-12).

Brand, Brooker, Goodman, and Servidio, alone or in combination, do not teach or suggest all of the elements of claim 25. Therefore, it is respectfully submitted that claim 25 is not obvious over Brand, Brooker, Goodman, and Servidio. Claim 48, being dependent upon and further limiting claim 25, should also be allowable for that reason, as well as for the additional recitations it contains. Reconsideration and withdrawal of the rejection are respectfully requested.

Conclusion

Applicant believes the claims, as amended, are patentable over the prior art, and that this case is now in condition for allowance of all claims therein. Such action is thus respectfully requested. If the Examiner disagrees, or believes for any other reason that direct contact with Applicants' attorney would advance the prosecution of the case to finality, he is invited to telephone the undersigned at the number given below.

"Recognizing that Internet communications are not secured, I hereby authorize the PTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file."

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REMARKS

The office action of July 10, 2007 has been reviewed and its contents carefully noted. Reconsideration of this case, as amended, is requested. Claims 22-25, 28-30, and 35-47 remain in this case, claims 45-47 being added and 22-25, 29-30, 35-36, 43 and 44 being amended by the present response. No new matter has been added. Specifically, claims 45-47 are fully supported by page 3, lines 6-20 of the application, as filed. The amendments to claims 25, 43 and 44 are fully supported by the Abstract, page 2, line 30 to page 3, line 5 and page 5, lines 7-8 of the application, as filed. The amendments to claims 22-24, 29-30 and 35-36 were made to correct dependencies from the amended claims.

STATEMENT OF THE SUBSTANCE OF THE INTERVIEW

The Applicant's attorney, Meghan Van Leeuwen, Bernhard Muellinger, an inventor of the present invention, and William Zimlich, a representative of the assignee, attended an in-person interview with the Examiner, Glenn Dawson, on November 30, 2007.

The Applicant demonstrated the device used in a method of the present invention during the interview.

Claim 25 was discussed in the interview. Goodman, Gilmore, and Rapaport, prior art of record, were discussed during the interview.

The parties first discussed the specification and 112 rejections. The Applicant's attorney and the Examiner agreed that replacing "breathing parameters" with "tidal volume or respiratory flow" would overcome these rejections.

The parties then discussed the Goodman reference. The Applicant's attorney pointed out that Goodman does not teach or suggest adjusting the respiratory flow or tidal volume. The Examiner stated that he needed to review Goodman in detail to determine whether or not this statement was correct.

The parties then discussed Gilmore. The Applicant's attorney stated that Gilmore does not teach or suggest adjusting aerosol doses. At this point, the parties also discussed the particular language of claim 25.

The Examiner stated that he had intended to reject the independent claims over the combination of Gilmore and Goodman in the office action. The Applicant's attorney stated that this combination still does not teach or suggest claim 25. The Examiner suggested that the Applicant explain in writing why the combination of Gilmore and Goodman would not teach or suggest the current claims. No agreement was reached with respect to the allowability of claim 25.

Applicant believes that this statement satisfies the requirements to file a Statement of the Substance of the Interview, and accurately represents the substance of the interview conducted.

Rejection under 35 U.S.C. §102

Claims 22, 25, 28-32, and 35,36-39 and 42-44 were rejected under 35 U.S.C. 102(b) as being anticipated by Goodman (5,813,397). Applicant respectfully disagrees with the rejection.

As amended, independent claim 25 claims, in part, "adjusting a respiratory flow or a tidal volume of the inhalation device based on the inhalation parameters such that an optimal dose of at least one active ingredient of at least one aerosol is applied to a desired section of a lung of the patient during the controlled inhalation". Claims 43 and 44 similarly claim "adjusting a respiratory flow or a tidal volume of the inhalation device based on the individual patient parameters such that an optimal dose of at least one active ingredient of at least one aerosol is applied to a desired section of a lung of the patient during the controlled inhalation" and "adjusting a respiratory flow or a tidal volume of the inhalation device based on the aerosol parameters such that an optimal dose of at least one active ingredient of at least one aerosol is applied to a desired section of a lung of the patient during the controlled inhalation", respectively.

The Examiner states that Goodman "has the capability to detect changes ... including flow rate and tidal volumes and adjust these parameters" (page 3, lines 1-3, present office action, dated July 10, 2007) but does not indicate where this is disclosed in the patent. Goodman does not disclose adjusting flow rate or tidal volume using individual patient parameters or aerosol parameters.

Tidal volume is the volume of air inhaled and exhaled with each breath. Tidal volume and respiratory flow both relate to air entering and leaving a patient's lungs during a breath. Goodman discloses that "the selected particle size can then be used with an optimal inspiratory flow, inspiratory pause, expiratory flow, and tidal volume to deliver the aerosol medication to the most therapeutically efficacious locations in the patient's airway" (column 34, lines 41-45). Goodman discloses adjusting aerosol delivery based on inspiratory flow, pause, expiratory flow, and tidal volume. Goodman further discloses: "It is another object of the invention to deliver aerosolized compounds in response to a measure of a patient's breathing pattern during inspiration. It is another object to select the optimal point or points for release of one or more pulses of medication based on an analysis of the patient's inspiratory flow in a first detected flow and to release the medication on the occurrence of the determined point or points during a subsequently detected inspiratory breath" (column 5, lines 17-24). Goodman "monitor[s] the patient's breath flow patterns…." (column 12, line 48). Goodman also states that it is "capable of autonomously modifying the initial therapy program based on detected progressive changes in the patient's breath flow and corresponding pulmonary functions." (column 6, lines 26-29).Goodman discloses only measuring, analyzing, and detecting respiratory flow and adjusting aerosol delivering based on measured respiratory flow. Goodman does not disclose adjusting respiratory flow or tidal volume and does not disclose adjusting respiratory flow or tidal volume based on individual patient parameters for the patient or aerosol parameters.

Goodman is merely a variable dose inhaler. It still provides a metered dose; the amount of medication in that particular dose just varies from patient to patient. The Applicant has reviewed the cites from Goodman made by the Examiner on page 4, lines 2-7 of the present office action, and finds no disclosure of adjusting the tidal volume or respiratory flow in Goodman. Note that some of these passages discuss trying to get the patient to adjust their breathing (for example, see column 5, lines 9-10, "feedback for prompting the patient to obtain a suitable breathing pattern for delivering a selected medication…"); however, claims 25, 43 and 44 of the present application adjust a respiratory flow or tidal volume of the inhalation device. Goodman does not disclose a method or device that is capable of adjusting a respiratory flow or tidal volume of an inhalation device.

By adjusting the respiratory flow or tidal volume of the inhalation device, the method of the present invention is able to optimize the dose of the active ingredient of an aerosol that is applied to a desired section of a lung of a patient, as claimed in claims 25, 43 and 44. Goodman does not disclose an optimal dose of at least one active ingredient of at least one aerosol being applied to a desired section of a lung of the patient during the controlled inhalation. As the attached Brand paper explains (filed as part of an IDS dated July 11, 2006), it is very difficult to optimize dosage of an active ingredient for an aerosol from patient to patient without controlling the breathing pattern of the patient. "The study has shown that within the study population the inhaled air volume and flow rate were quite different. Consequently, **total particle deposition varied between 20 and 95%, depending on breathing patterns**." (Brand, 1999, Abstract, page 724). "The dose depends on many factors that are difficult to control: particle deposition in the lungs strongly depends on particle size, lung structure and breathing pattern, with the result that particle deposition and thus the deposited dose varies considerably among patients." (Brand, 1999, p. 724, second column, first paragraph). "Although all patients were carefully trained at the beginning of their inhalation therapy to perform inhalations deeply and slowly, the breathing pattern was quite different among patients (Fig. 2)." (Brand, 1999, p. 726, second column, last paragraph). As discussed above, Goodman adjusts the amount of medication administered, but it does not control or adjust tidal volume or respiratory flow. Therefore, Goodman does not disclose providing an optimal dose of at least one active ingredient of an aerosol to a desired section of a lung of a patient.

Amended independent claims 25, 43, and 44 also claims, in part, the step of "controlling an air flow through the inhalation device using the inhalation device during the controlled inhalation" (emphasis added).

As discussed above, Goodman discloses an MDI (metered dose inhaler) which monitors breathing maneuvers. The MDI in Goodman automatically triggers only once an inhalation flow threshold is reached. After reaching the threshold, the flow and volume are not controlled. Therefore, the dose deposited within the lungs still has a high variability. Goodman only discloses measuring the breathing maneuvers and administering drug based on the measured breathing maneuvers. While Goodman discloses guiding patients by audible or visible signals, this lacks efficacy. The Applicant has shown published clinical data from Koehler et al. that

Rejection under 35 U.S.C. §102

6. Claims 24, 25, 28, 38 and 42-44 were rejected under 35 U.S.C. 102(e) as being anticipated by Brooker (6,269,810). Applicant respectfully disagrees with the rejection.

As amended, independent claim 25 claims, in part, "individually adjusting the inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters to obtain a predetermined aerosol deposition in a lung of the patient, comprising the substeps of: evaluating the inhalation parameters for the inhalation and adjusting a breathing maneuver of the patient according to capabilities of the patient by adjusting a respiratory flow or a tidal volume of the inhalation device based on the inhalation parameters such that an optimal dose of at least one active ingredient of at least one aerosol is applied to a desired section of the lung of the patient during the controlled inhalation" (emphasis added). Amended claims 43 and 44 similarly claim "individually adjusting the inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the individual patient parameters to obtain a predetermined aerosol deposition in a lung of the patient, comprising the substeps of: evaluating the individual patient parameters for the inhalation; and adjusting a breathing maneuver of the patient according to capabilities of the patient by adjusting a respiratory flow or a tidal volume of the inhalation device based on the individual patient parameters such that an optimal dose of at least one active ingredient of at least one aerosol is applied to a desired section of the lung of the patient during the controlled inhalation" and "individually adjusting the inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the aerosol parameters to obtain a predetermined aerosol deposition in a lung of the patient, comprising the substeps of: evaluating the aerosol parameters for the inhalation; and adjusting a breathing maneuver of the patient according to capabilities of the patient by adjusting a respiratory flow or a tidal volume of the inhalation device based on the aerosol parameters such that an optimal dose of at least one active ingredient of at least one aerosol is applied to a desired section of the lung of the patient during the controlled inhalation", respectively (emphasis added).

Brooker does not disclose individually adjusting an inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters to obtain a predetermined aerosol deposition in the lung of a patient.

In claims 25, 43, and 44, the breathing maneuver of the patient is adjusted, i.e. the inhalation device urges the patient to breath following the breathing maneuver as adjusted and given by the device. This is in clear contrast to Brooker. In the passages cited by the Examiner, Brooker clearly describes that the patient breathes as he/she likes: "with cooperation of the patient (in drawing a deep breath)..." (col. 6, lines 17, 18); "followed by a volume of air which makes up the latter part of each breath" (col. 6, lines 22, 23, irrespective of the size/volume of this latter part); and "The software will also cause the beeper or alarm to sound if sensor 29 does not detect any breaths for 10 seconds. This will assure that the patient is breathing properly..." (col. 14, lines 2 to 5). Thus, the patient is absolutely free to breath as he/she likes, and the breathing is just monitored to indicate if it is abnormal.

Even though Brooker conducts tests on the patient prior to administering the drug by inhalation (see col. 7, lines 33 to 35), the actual inhalation is not controlled by adjusting the breathing pattern. Based on the test results, the aerosol volume or the air to drug aerosol volume ratio is set (see col. 6, lines 30 to 40); however, the whole inhalation or aerosol deposition, respectively, fails if, after the tests, at actual inhalation, the patient breathes differently than before.

Furthermore, in amended claims 25, 43, and 44, a predetermined aerosol deposition in the lung is obtained. Brooker does not obtaining a predetermined aerosol deposition in the lungs of the patient. Brooker mentions in col. 6, lines 12, 13 "that the drug aerosol reaches the deep lung". While it may appear at first glance that this is a kind of predetermined aerosol deposition, there is actually no predetermined aerosol deposition disclosed in Brooker. Since the inhalation in Brooker depends on the patient's breathing, there is no way to assure in Brooker that any of the drug, let alone a predetermined amount, actually reaches the deep lung. The amount of aerosol deposition depends on how much of the air volume following the drug volume is inhaled by the patient. If the patient does not inhale a sufficient amount of air to "push" the preceding drug

volume into the lung, the drug volume simply does not reach the deep lung. Therefore, there is no predetermined aerosol deposition in Brooker.

Brooker does discuss tidal volume. "It has been found that it is especially useful for some therapies that the drug aerosol reaches the deep lung. The entire volume of each breath is called the 'inspired volume'. This inspired volume can be a normal breath, referred to as 'tidal volume', or could be a deep breath of much greater volume, referred to as a 'vital capacity' breath. With cooperation from the patient (in drawing a deep breath), the device enables this deep penetration by providing that the metered volume of drug aerosol from the plenum forms the first part of each inhaled breath (approximately equal to the tidal volume) and is followed by a volume of air which makes up the latter part of each inhaled breath (the remainder of the vital capacity). It has been determined that this air portion in the latter part of each breath tends to help push the initial drug portion down into the deep lung. If the drug made up most of the entire breath, then the latter part of each breath would not be delivered to the deep lung and may not be available for maximum benefit." (col. 6, lines 12-29). Part of Brooker's method calculates "the number of breaths required from the patient" (col. 7, line 28). Clearly, the patient's breathing accounts for the tidal volume and respiratory flow. The device is not able to adjust these parameters based on an individual patent. The device in Brooker only controls aerosol pulses, pulse lengths and the number of breaths. In addition, a major objective in Brooker is the safe inhalation of neoplastic drugs by capturing the exhaled aerosol. The inhalation device in Brooker is not intended for a routine inhalation at home.

In response to the arguments made in the last response, as well as Mr. Muellinger's declaration, the Examiner states "[s]ince the adjusted pulse would make up a portion of the respiratory flow or the tidal volume, and given that tidal volume is the lung volume representing the normal volume of air displaced between normal inhalation and exhalation when extra effort is not applied, the adjustment of the pulse would adjust the respiratory flow or tidal volume (at least to some extent)" (present office action dated March 20, 2009, page 11, lines 12-16, see also page 8, lines 7-12). Applicant agrees that the adjusted pulse would make up a portion of the tidal volume as it is the first part that is inhaled, as mentioned in col. 6, lines 17 to 24 of Brooker. Even accepting that the adjusted pulse would make up a portion of the tidal volume, however, it cannot be concluded that adjustment of the pulse would adjust the tidal volume to any extent. In

Brooker, the adjusted pulse (volume) cannot adjust the tidal volume as the tidal volume in Brooker is determined by the way the patient breathes. If the patient does not breathe regularly but has an irregular breathing pattern, the tidal volume for each breath is different despite having an adjusted pulse volume. In addition, the adjusted pulse would not make up a portion of the respiratory flow as it is just a volume aerosol and not a "flow". Thus, the Applicant respectfully submits that the Examiner's statement above is incorrect.

Brooker does not disclose adjusting flow rate or tidal volume using individual patient parameters or aerosol parameters. Brooker states that "[i]t will be remembered that the pulmonary dosing system of the present invention does not include a respirator or the like, and is intended for use with patients who can breathe normally." (col. 4, lines 31-35). The breathing pattern in Brooker is not adjustable in the device. The breathing pattern in Brooker is not controlled, since deposition is preferably measured during the inhalation treatment by using the radioactive tracer Tc99m. Once the data using the tracer has been collected, a physician is required to train and guide the patient. The device is not capable of being individually adjusted by adjusting a respiratory flow or a tidal volume of the inhalation device based on the inhalation parameters.

By adjusting the respiratory flow or tidal volume of the inhalation device, the method of the present invention is able to optimize the dose of the active ingredient of an aerosol that is applied to a desired section of a lung of a patient, as claimed in claims 25, 43 and 44. Brooker does not disclose an optimal dose of at least one active ingredient of at least one aerosol being applied to a desired section of a lung of the patient during a controlled inhalation. As discussed in the Brand paper filed as part of an IDS dated July 11, 2006 and in the office action response dated August 14, 2008, it is very difficult to optimize dosage of an active ingredient for an aerosol from patient to patient without controlling the breathing pattern of the patient. "The study has shown that within the study population the inhaled air volume and flow rate were quite different. Consequently, **total particle deposition varied between 20 and 95%, depending on breathing patterns**." (Brand, 1999, Abstract, page 724). "The dose depends on many factors that are difficult to control: particle deposition in the lungs strongly depends on particle size, lung structure and breathing pattern, with the result that particle deposition and thus the deposited dose varies considerably among patients." (Brand, 1999, p. 724, second column, first

paragraph). "Although all patients were carefully trained at the beginning of their inhalation therapy to perform inhalations deeply and slowly, the breathing pattern was quite different among patients (Fig. 2)." (Brand, 1999, p. 726, second column, last paragraph). As discussed above, Brooker does not control or adjust tidal volume or respiratory flow. Therefore, Brooker does not disclose providing an optimal dose of at least one active ingredient of an aerosol to a desired section of a lung of a patient.

Brooker does not disclose each and every element of Applicant's claims 25, 43, and 44. Therefore, it is respectfully suggested that the rejection of independent claims 25, 43 and 44 as being anticipated by Brooker is overcome. Claims 28, 38, 42, and 49, being dependent upon and further limiting claim 25, should also be allowable for that reason, as well as for the additional recitations they contain. Reconsideration and withdrawal of the rejection of claims 24, 25, 28, 38 and 42-44 are respectfully requested.

Rejections under 35 U.S.C. §103

8. Claim 23 was rejected under 35 U.S.C. 103(a) as being unpatentable over Brooker in view of Servidio (5,598,838). Applicant respectfully disagrees, and believe the claims, as amended, are patentable over Brooker for the reasons given above in respect to the section 102 rejection of claim 25, from which claim 48 (previously claim 23) depends. The arguments above as to the novelty of claim 25 are repeated here by reference.

Regarding amended claim 25, Brooker does not teach or suggest individually adjusting an inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters to obtain a predetermined aerosol deposition in the lung. Brooker also does not teach or suggest adjusting a breathing maneuver of a patient according to capabilities of the patient by adjusting flow rate or tidal volume based on inhalation parameters. Brooker states that "[i]t will be remembered that the pulmonary dosing system of the present invention does not include a respirator or the like, and is intended for use with patients who can breathe normally." (col. 4, lines 31-35). The breathing pattern is Brooker is not adjustable in the device. The breathing pattern in Brooker is not controlled, since deposition is preferably measured during inhalation treatment by using the radioactive tracer Tc99m. Once the data using the tracer has been collected, a physician is required to train and guide the patient. The device is

The Applicant respectfully notes that, in the present office action, the Examiner "agrees with Bernhard Muellinger's declaration that Willemot does not teach or suggest individually adjusting an inhalation device to a patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters and Willemot does not teach or suggest adjusting flow rate or tidal volume based on inhalation parameters." (present office action dated March 20, 2009, page 12, lines 17-21).

Brooker and Willemot, alone or in combination, do not teach or suggest all of the elements of claims 25, 43 and 44. Therefore, it is respectfully suggested that independent claims 25, 43 and 44 are not obvious over Brooker in view of Willemot. Claims 45-47, 50 (previously claim 22) and 51-54 (previously claims 29, 30, 35, and 36, respectively) should also be allowable for that reason, as well as for the additional recitations they contain. Reconsideration and withdrawal of the rejection are respectfully requested.

10. Claims 24, 25, 28, 38-40 and 42-44 were rejected under 35 U.S.C. 103(a) as being unpatentable over Brand (6,606,989) in view of Brooker. Applicant respectfully disagrees with this rejection. The arguments regarding the anticipation and nonobviousness of claims 25, 43 and 44 over Brooker, are repeated herein by reference.

Regarding amended claims 25, 43, and 44, Brand does not teach or suggest individually adjusting an inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the individual patient parameters or the aerosol parameters to obtain a predetermined aerosol deposition in the lung. Brand also does not teach or suggest adjusting a breathing maneuver of a patient according to capabilities of the patient by adjusting flow rate or tidal volume based on the individual patient parameters or the aerosol parameters.

In the present invention as claimed in claims 25, 43 and 44, each individual patient has to inhale step by step the desired drug amount with his individual inhalation maneuver, which guarantees that the entire inhalation is successfully completed.

In Brand, flow rates and volumes can be selected by the user by entering values for inhalation volume and inhalation flow rate. However, this selection does not result in an optimal dose of at least one active ingredient of at least one aerosol being applied to a desired section of a

lung of a patient during a controlled inhalation. Brand does not teach or suggest a device that is individually adjusted by adapting a dosage of at least one aerosol on the basis of the individual patient parameters or the aerosol parameters to obtain a predetermined aerosol deposition in the lung. In addition, Brand does not teach or suggest adjusting a breathing maneuver of a patient according to capabilities of the patient by adjusting a respiratory flow or a tidal volume of the inhalation device based on the individual patient parameters or aerosol parameters.

While Brand teaches having the user select flow rates and volumes by entering values for inhalation volume and inhalation flow rate, even a trained physician or a trained nurse is not able to guide a patient so that the patient inhales with an optimum flow rate and volume. The Applicant has shown published clinical data from Köhler et al. that show that, even when patients are guided, they do not inhale with the optimum flow rate and inhalation volume, as shown in the published clinical data from Köhler et al (Journal of Aerosol Medicine, 2005, submitted in the IDS dated July 11, 2006). Köhler specifically states that "All the CF patients have been regularly trained for several years in manually triggered inhalation by a physiotherapist (i.e. to press the interrupter immediately prior to the start of inhalation and to release the interrupter immediately after the end). They were instructed to inhale deeply and slowly." (Köhler, page 388, column 1, third full paragraph). Despite these instructions, "it was found that inhalation with the electronically controlled inspiration flow by means of AKITA permitted a deposition that was 46% (range 3-162%) higher and more peripheral than the conventional mode.... The improvement noted for deposition was obviously attributable to the controlled breathing maneuver alone." (Köhler, page 391, first full paragraph).

The Applicant respectfully notes that, in the present office action, the Examiner "agrees with Bernhard Meullinger's declaration that Brand does not teach or suggest individually adjusting an inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters and Brand does not teach or suggest adjusting flow rate or tidal volume based on inhalation parameters." (present office action dated March 20, 2009, page 11, lines 17-21).

As discussed above with respect to the rejection of claims 25, 43, and 44, Brooker does not provide what Brand lacks.

Brand and Brooker, alone or in combination, do not teach or suggest all of the elements of claims 25, 43 and 44. Therefore, it is respectfully suggested that independent claims 25, 43 and 44 are not obvious over Brand in view of Brooker. Claims 25, 28, 38, 42 and 49 (previously claim 24), being dependent upon and further limiting claim 25, should also be allowable for that reason, as well as for the additional recitations they contain. Reconsideration and withdrawal of the rejection are respectfully requested.

Claim 23 was rejected under 35 U.S.C. 103(a) as being unpatentable over Brand in view of Brooker and Servidio. Applicant respectfully disagrees. The arguments regarding the obviousness of claim 25, upon which claim 48 (previously claim 23) depends, over Brand in view of Brooker, is repeated herein by reference.

Regarding amended claim 25, Servidio does not provide what Brand and Brooker lack. More specifically, Servidio does not teach or suggest individually adjusting an inhalation device to a patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters to obtain a predetermined aerosol deposition in the lung. Servidio also does not teach or suggest adjusting a breathing maneuver of a patient according to capabilities of the patient by adjusting flow rate or tidal volume based on the inhalation parameters. Instead, Servidio teaches a pressure support ventilatory assist device with pressure regulation. Servidio mentions tidal volume; however, the tidal volume is just an inputted or outputted value, and one of a number of parameters that are measured during use of the device.

Brand, Brooker and Servidio, alone or in combination, do not teach or suggest all of the elements of claim 25. Therefore, it is respectfully submitted that claim 25 is not obvious over Brand, Brooker in view of Servidio. Claim 48 (previously claim 23), being dependent upon and further limiting claim 25, should also be allowable for that reason, as well as for the additional recitations it contains. Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 22, 29, 30, 35, 36, 37 and 45-47 were rejected under 35 U.S.C. 103(a) as being unpatentable over Brand in view of Brooker and Willemot (5,560,353). Applicant respectfully disagrees with this rejection. The arguments regarding the anticipation and nonobviousness of claim 25, upon which claims 45, 50 (previously claim 22) and 51-54

EXHIBIT C

Serial No.	09/810,988
Applicant:	Gerhard Scheuch *et al.*
Filed:	March 16, 2001
Title:	DEVICE FOR THE CONTROLLED INHALATION OF THERAPEUTIC AEROSOLS
Art Unit:	3731
Examiner:	Glenn K. Dawson
Confirmation Number:	7304
Attorney Docket No.:	RVOS-E1341US

HONORABLE COMMISSIONER OF PATENTS
Alexandria, VA 22313-1450

DECLARATION UNDER 37 CFR § 1.132

In response to the Office Action dated February 20, 2008, I, Peter Brand, do hereby declare and say as follows:

BACKGROUND INFORMATION

1. I am a co-inventor of U.S. Patent No. 6,606,989 (hereinafter referred to as "Brand").

2. I obtained a degree in University Master Degree in Physics (Dipl. Physics.) at the Johann Wolfgang Goethe-Universität in Frankfurt, Germany in 1986 and graduated with a PhD in 1990 in Biophysics. Topic: *Development of a mobile device for the measurement of atmospheric aerosol particle size distributions.*

3. From 1987 to 1989, I was employed at the GSF – Research Centre for Environment and Health at the Insitute for Biophysical Radiation Research in Frankfurt.

4. From 1989 to 2003, I was employed at the GSF – Institute for Inhalation Biology in Munich, Germany as a senior scientist and performed clinical trials in aerosol delivery research and investigated new aerosol drug delivery technologies and influences of the breathing pattern on lung deposition.

5. From 2003 to 2007, I was employed at Inamed Research GmbH & Co. KG in Gauting, Germany as a senior scientist for managing medical writing and biometry.

6. Since 2007, I have been employed at RWTH Aachen University at the Institute for Occupational and Social Medicine in Aachen, Germany.

THE APPLICATION

7. I have read and understood the above referenced patent application, including the specification, claims and the relevant prior art.

8. The standard I used for anticipation is whether every element of a claim is disclosed in a single prior art reference.

9. The standard I used for obviousness is whether the claims would have been obvious to an ordinary person skilled in the art in light of the references cited.

10. Brand does not teach or suggest individually adjusting an inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters.

11. Brand also does not teach or suggest adjusting flow rate or tidal volume based on inhalation parameters or controlling an air flow through an inhalation device using the inhalation device during the controlled inhalation.

12. Brand teaches "a device for deposition of a medicament in a liquid form in the lungs" (claim 1, column 4, lines 33-34). Brand uses a pre-settable volumetric flow of compressed air and flow rate that can be set "over a range from 0 to 1000 cm^3/s" (column 3, lines 39-40).

13. Brand also teaches that "setting the operating pressure of the vaporizer, for instance over a range of values from 0 to 2 bar" (column 3, lines 49-50) is possible. Timing parameters are also set. "The inhaled volume then derives from the inhalation period and the flow of inhalation" (column 4, lines 6-8). The inhalation period can be set from 0 to 20 seconds.

14. Even well trained pulmonologists are not familiar with the scientific background of aerosol particle deposition within the lungs. Offering such a broad range of inhalation parameters

that can be set by the physician and the patient prevents optimum therapy for an individual patient.

15. Even after extensive breathing training, patients typically revert to a respiratory flow rate and tidal volume that are comfortable to them. In clinical trials with conventional inhalation devices, it was shown that the incorrect breathing pattern is one of the most important errors that is made during inhalation treatment. (Giraud et al. 2002, 19:246-251, European Respiratory Journal, copy attached).

16. The Giraud reference specifically states that misuse of pressurized metered-dose inhalers is mainly due to poor coordination (see Abstract).

17. The Giraud reference also states that "there was no significant direct relationship between education and AIS, which is most likely due to the fact that education is not always successful (errors are corrected in only 50% of poor users, 50% of whom return to their 'bad habits' within a few weeks)...." (page 250). Note that AIS is an "asthma instability score" referred to in Giraud.

18. The Giraud reference also states that "[the] use of devices which alleviate coordination problems should be reinforced in pressurized metered-dose inhaler misusers." (Abstract) and "[u]se of devices that make inhalation technique easier... should be reinforced in pressurized metered-dose inhaler misusers" (page 250). The present invention makes the inhalation technique much easier, since the user no longer needs to be "coordinated" and breathe correctly.

19. Controlled aerosol delivery to the lungs can only be guaranteed when inhalation parameters are inputted into the inhalation device, as claimed in claims 25, 43 and 44.

20. Brand does not teach or suggest individually adjusting an inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters, adjusting flow rate or tidal volume based on inhalation parameters, or controlling an air flow through an inhalation device using the inhalation device during the controlled inhalation. .

CONCLUSION

Based on the above analysis, I conclude that the claims in the present patent application are not anticipated or obvious over Brand.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: August 5th 2008 By: _____
Peter Brand

EXHIBIT D

Serial No.	09/810,988
Applicant:	Gerhard Scheuch *et al.*
Filed:	March 16, 2001
Title:	DEVICE FOR THE CONTROLLED INHALATION OF THERAPEUTIC AEROSOLS
Art Unit:	3731
Examiner:	Glenn K. Dawson
Confirmation Number:	7304
Attorney Docket No.:	RVOS-E1341US

HONORABLE COMMISSIONER OF PATENTS
Alexandria, VA 22313-1450

DECLARATION UNDER 37 CFR § 1.132

In response to the Office Action dated February 20, 2008, I, Bernhard Muellinger, do hereby declare and say as follows:

BACKGROUND INFORMATION

1. I am a co-inventor of the present application.

2. I obtained a degree in Precision and Micromechanical Engineering in 1995 from the University of Applied Science in Munich, with a focus on medical device technology.

3. From 1995 to 1998, I was employed at the GSF – Research Centre for Environment and Health, working on the research project "Optimization of Aerosol Deposition with Monodisperse Encapsulated Particles". I held different positions related to aerosol research while I was at GSF.

4. From 1998 to 2000, I was employed at the Asklepios Clinics in cooperation with the Clinical Research Group of GSF and developed new pulmonary diagnostic technologies and performed clinical trials in aerosol delivery research.

5. Since 2000, I have been employed at Activaero GmbH. I am currently the Vice President of Device & Clinical Development, and I am responsible for medical device development and clinical development. I have managed numerous projects developing products including the AKITA® inhalation system, the AKITA²™ inhalation system, the AKITA JET™ inhalation system and several customer specific medical devices. I am also responsible for optimization of pharmaceutical formulations, dosing and aerosol targeting strategies in preclinical and clinical drug development projects within Activaero GmbH. I have extensive experience in clinical trials in drug delivery by aerosols.

THE APPLICATION

6. I have read and understood the above referenced patent application, including the specification, claims and the relevant prior art.

7. The standard I used for anticipation is whether every element of a claim is disclosed in a single prior art reference.

8. The standard I used for obviousness is whether the claims would have been obvious to an ordinary person skilled in the art in light of the references cited.

9. The Examiner rejected independent claims 25, 43, and 44 as being anticipated by Brooker (6,269,810).

10. Brooker discloses "a pulmonary dosing system and method for supplying to a patient a predetermined amount of respirable therapeutically active material" (Abstract).

11. The control system in Brooker operates "the pulmonary dosing system in accordance with operator inputs selecting the number of patient exhales between pulses, the pulse length, and the amount of material to be dispended to the patient" (column 2, lines 55-59).

12. Brooker focuses on an exhaust port connected to an exhalation line, and a filter that captures the exhaled aerosol.

13. Brooker specifically states that its apparatus "does not include a respirator or the like, and is intended for use with patients who can breathe normally" (column 4, lines 33-35).

14. Brooker's device does not adjust respiratory flow or tidal volume. Instead, similar to every other prior art inhalation device, a patient using Brooker's device would be told and trained to inhale deeply. "With cooperation from the patient (in drawing a deep breath), the device enables this deep penetration by providing that the metered volume of drug aerosol from the plenum forms the first part of each inhaled breath...." (column 6, lines 17-21). The volume of the inhaled breath is not metered; the volume of the drug aerosol is set by an internal plenum to give an aerosol pulse.

15. Brooker states that the aerosol pulse should be adjusted to the tidal volume and vital capacity. Then the aerosol pulse can be programmed into the control system. The pulse is adjusted, not the respiratory flow or tidal volume. "For the more efficient operation, the plenum is provided during the exhalation phase with a drug aerosol volume equal to about 1/4 to 1/2 of the patient's normal inspired volume" (column 6, lines 42-45).

16. Additionally, it is clear from Brooker that there is no further control besides control of an aerosol pulse. In fact, there is a lack of control, and the tidal volume is not controlled by the system. "The tidal volume and vital capacity may be determined by known pulmonary function tests. The control system is then programmed to deliver the selected amount of drug aerosol to the plenum based on the pulmonary function of the animal or human" (column 6, lines 47-51).

17. Respiratory flow and tidal volume are not adjusted in Brooker. Even when patients are guided, they do not inhale with the optimum flow rate and inhalation volume. In fact, studies have shown that breathing patterns can not be effectively controlled by training patients to breathe, as explained in the attached publication by Köhler et al. (Journal of Aerosol Medicine, 2005, submitted in the IDS dated July 11, 2006).

18. Therefore, Brooker could not control the application of a pharmaceutical aerosol to provide an accurate dosage.

19. Brooker does not disclose individually adjusting an inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters. More specifically, Brooker does not disclose adjusting flow rate or tidal volume using individual patient parameters or aerosol parameters. Therefore, claims 25, 43, and 44 are not anticipated by Brooker.

20. The Examiner rejected independent claims 25, 43, and 44 as being obvious over Brand (6,606,989) in view of Brooker.

21. As discussed above, Brooker does not teach or suggest individually adjusting an inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters, nor does Brooker teach or suggest adjusting flow rate or tidal volume based on inhalation parameters.

22. Brand teaches "a device for deposition of a medicament in a liquid form in the lungs" (claim 1, column 4, lines 33-34). Brand uses a pre-settable volumetric flow of compressed air and flow rate that can be set "over a range from 0 to 1000 cm^3/s" (column 3, lines 39-40).

23. Brand also teaches that "setting the operating pressure of the vaporizer, for instance over a range of values from 0 to 2 bar" (column 3, lines 49-50) is possible. Timing parameters are also set. "The inhaled volume then derives from the inhalation period and the flow of inhalation" (column 4, lines 6-8). The inhalation period can be set from 0 to 20 seconds.

24. Even well trained pulmonologists are not familiar with the scientific background of aerosol particle deposition within the lungs. Offering such a broad range of inhalation parameters that can be set by the physician and the patient prevents optimum therapy for an individual patient.

25. Even after extensive breathing training, patients typically revert to a respiratory flow rate and tidal volume that are comfortable to them. In clinical trials with conventional inhalation devices, it was shown that the incorrect breathing pattern is one of the most important errors that is made during inhalation treatment. (Giraud et al. 2002, 19:246-251, European Respiratory Journal, copy attached).

26. The Giraud reference specifically states that misuse of pressurized metered-dose inhalers is mainly due to poor coordination (see Abstract).

27. The Giraud reference also states that "there was no significant direct relationship between education and AIS, which is most likely due to the fact that education is not always successful (errors are corrected in only 50% of poor users, 50% of whom return to their 'bad habits' within a few weeks)...." (page 250).

28. The Giraud reference also states that "[the] use of devices which alleviate coordination problems should be reinforced in pressurized metered-dose inhaler misusers." (Abstract) and "[u]se of devices that make inhalation technique easier... should be reinforced in pressurized metered-dose inhaler misusers" (page 250). The present invention makes the inhalation technique much easier, since the user no longer needs to be "coordinated" and breath correctly.

29. Controlled aerosol delivery to the lungs can only be guaranteed when inhalation parameters are inputted into the inhalation device, as claimed in claims 25, 43 and 44.

30. Brand does not teach or suggest individually adjusting an inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters and Brand does not teach or suggest adjusting flow rate or tidal volume based on inhalation parameters. Therefore Brand does not teach the elements in claims 25, 43, and 44 missing from Brooker.

31. Servidio (5,598,838) teaches an "improved pressure support ventilatory assist system for providing pressurized air to a patient by way of a nasal mask" (column 2, lines 35-38).

32. Servidio's invention is a ventilator, which is in a completely different field than the inhalation device of the present invention.

33. Servidio does not teach or suggest control of an inhalation device for inhalation of aerosols. Servidio does not teach or suggest individually adjusting an inhalation device to a patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters. Servidio also does not teach or suggest adjusting flow rate or tidal volume based

on the inhalation parameters. Instead, Servidio teaches a pressure support device to provide air under positive pressure.

34. Therefore, Servidio does not teach the elements in claims 25, 43, and 44 missing from Brand and Brooker.

35. Willemot (5,560,353) teaches "a system [that] supplies discrete puffs of gas, containing particles of an active product, to a patient's respiratory tract" (Abstract). Willemot teaches a "device for controlling the supply of doses of carrier gas from source 3 including a three way valve 5 coupled to a sensor 6 which is responsive to the phases of inhalation and exhalation of the user" (column 2, lines 9-13).

36. Neither respiratory flow nor tidal volume is adjusted by the device taught in Willemot. Willemot only supplies gas flow for driving the nebulizer. The inhalation flow rate is not controlled by the device.

37. Willemot's device only provides "gas flow control [that] delivers a metered amount of the gas to the nebulizer and to the user in each puff" (Abstract). As described in the Figure, only the nebulizer nozzle is supplied over tubing (2) and the patient can also inspire through the additional air inlet (4).

38. Willemot does not teach or suggest individually adjusting an inhalation device to a patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters and Willemot does not teach or suggest adjusting flow rate or tidal volume based on inhalation parameters. Therefore, Willemot does not teach the elements in claims 25, 43, and 44 missing from Brooker and Brand.

CONCLUSION

Based on the above analysis, I conclude that the claims in the present patent application are not anticipated by Brooker or obvious over any combination of the references cited.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are

punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: July 17, 2008 By: B. Muellinger
Bernhard Muellinger

REMARKS

Applicants appreciate the opportunity afforded by the Examiner to make a further adjustment of the claims in response to the new grounds of rejection.

Section 102 Rejections

Two novelty rejections have been applied against different combinations of the claims. All of the claims stand rejected over one or the other of two references.

Claims 1-3, 5-7, 9-14, 16-21, and 23-25 stand rejected over US Patent 6,269,810 to Brooker et al.

Brooker et al. disclose a pulmonary dosing system and method that uses preparatory breaths (typically normal breathing breaths) for calculating the number of breaths required from an individual patient to inhale the necessary amount of a therapeutically active material. Pulsed amounts of the therapeutically active material are entrained in filtered atmospheric air. The entrained material is inhaled during subsequent breaths. The dosage is controlled by adjusting the pulse length and the number of patient exhales between pulses.

The present applicants have found that the inhalation maneuver distinguished by variables of flow and volume is important to the administration of the correct medicamentation dose to the lung in an optimal manner. In clear contrast to the disclosure of Brooker et al., according to the present invention, individual patient parameters and/or aerosol parameters are provided and used for the inhalation, and in particular, the respiratory flow and/or tidal volume are adjusted. The present specification acknowledges on page 2, lines 17-19, that every patient inhales at a different rate and with a different volume so that drug dosage within the lung varies widely. This problem is solved by the present invention so that the aerosol deposition in the lung can be predetermined and the desired dosage administered in a manner agreeable to patients, since the maneuver is adapted to the patients'

breathing capabilities (see for example page 3, lines 31-34, and item 1 of page 5 of the present specification).

Thus, in contrast to Brooker et al., the claimed invention adjusts the respiratory flow and/or tidal volume to the inhalation device. All three independent claims 1, 12, and 19 provide for the adjustment of individual aerosol doses by adjusting the respiratory flow and/or tidal volume to the inhalation device. This adaptation to patient capabilities provides for applying more optimal doses of medicaments to the lungs of different patients and can also accommodate changes in the pulmonary function of individual patients. New breathing maneuvers and changed respiratory flows can also be accommodated for the administration of different medicaments or for the application of medicaments to different sections of the patients' lungs.

Dependent claims 10, 18, and 25 further specify that the individual patient parameters and/or aerosol parameters for the inhalation are evaluated and, on the basis thereof, the respiratory flow and the tidal volume of the inhalation device are adjusted. Neither the adjustment of pulse length nor the adjustment of the number of patient exhales between pulses as proposed by Brooker et al. satisfies either part of the requirements for adjusting both the respiratory flow and the tidal volume of the claimed inhalation device. In addition, no appreciation of a need for making such adjustments is found in Brooker et al.

Claims 1-4, 6-22, 24, and 25 stand rejected over US Patent 5,560,353 to Willemot et al.

Willemot et al. disclose equipment and processes for supplying doses of at least one gas containing particles of an active product to the respiratory tracts of patients. Although coordinated with the breath phases of patients, the doses are controlled by regulating the number of discrete puffs of the gas through a nebulizer. Some patients receive more of the discrete puffs and others receive less. The number of doses, times, and dates of treatment are monitored.

Nothing suggested in Willemot et al. controls inhalation by adjusting the respiratory flow and/or the tidal volume of the inhalation device. Neither the inhalation flow nor inhalation volume is regulated by Willemot

REMARKS

The Final Office Action of December 31, 2003 and Advisory Action of March 15, 2004 have been reviewed and their contents carefully noted. Reconsideration of this case, as amended, is requested. Claims 2 through 11, 13 through 18, and 20 through 25 remain in this case, claims 2, 5, 6, 9, 10, 11, 13, 16, 17, 18, 20, 23, 24, and 25 being amended and claims 1, 12, and 19 being cancelled by this response. No new matter has been added.

Preliminary Comments

The claims were amended as follows:

Claims 10, 18, and 25 were rewritten in independent form.

Claims 2, 5, 6, 9, and 11 were amended to depend from newly independent claim 10.

Claims 13, 16, and 17 were amended to depend from newly independent claim 18.

Claims 20, 23, and 24 were amended to depend from newly independent claim 25.

Rejections under 35 U.S.C. §103

Claims 1-3, 5-7, 9-14, 16-21, and 23-25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Brooker *et al.* (U.S. Patent No. 6,269,810) in view of Gilmore *et al.* (U.S. Patent No. 5,931,160).

In rejecting claims 1-3, 5-7, 9-14, 16-21, and 23-25, the office action acknowledges that Brooker does not teach or suggest "adjusting of a respiratory flow or tidal volume of the inhalation device" (Final Office Action, dated 12/31/03, page 3, lines 15-16). Gilmore does not provide what Brooker lacks.

As already acknowledged by the Examiner, Brooker *et al.* (U.S. Patent No. 6,269,810) does not teach or suggest "adjusting of a respiratory flow or tidal volume" (Final Office Action,

dated 12/31/03, page 3, lines 15-16). However, this is an essential aspect in individualizing the inhalation for an individual patient. Only with the adjustment of the respiratory flow or the tidal volume based on the individual patient parameters and/or aerosol parameters for the inhalation is it possible for sufficient drug to be delivered to the lung. In this regard it is not decisive what is dispensed by the inhalation device but rather what is actually transported to the lung, i.e., what amount of the dispensed aerosol reaches the lung. This, of course, strongly depends on the kind of aerosol that is to be inhaled, and on the individual patient parameters (for example, lung volume, inhaling rate, inhaling volume etc.) but not so much on the inhalation device itself. This aspect was clearly not recognized by Brooker *et al.*, and the applicants claim to be the first who realized that an individualization of the inhalation is necessary, especially for expensive drugs or drugs where it is of utmost importance that no over-dosage occurs. Furthermore, applicants claim to be the first to realize that such an individualization can be achieved on the basis of the individual patient parameters and/or aerosol parameters, as laid out in the new independent claims.

In clear contrast thereto, Brooker *et al.* is only concerned with the drug dosage, i.e., is focused on the dosage of drug that is dispensed by the inhalation device so that the drug dosage that actually reaches the lung varies widely.

As regards Gilmore *et al.* (U.S. Patent No. 5,931,160), applicants again point out that a ventilator control system is totally remote from an inhalation system. First, with a ventilator system, quite different volumes and flows are used. The volumes and flows with a ventilator system are quite higher than with an inhalation device. Thus, a ventilator system is not at all suitable for an inhalation. With a ventilator system, it is only important that sufficient oxygen reaches the lung but a specific dosage of an aerosol like in an inhalation device is of no importance with a ventilation system. Thus, inhalation devices have a different focus. Moreover, inhalation devices according to the present invention may be used by the patients alone without the necessity of having a medical doctor being present during the inhalation. Oh the other hand, with a ventilator system, it is always required that a medical doctor starts and monitors the ventilation to guarantee that in extreme cases the patient does not pass away.

EXHIBIT G

Serial No.	09/810,988
Applicant:	Gerhard Scheuch *et al.*
Filed:	March 16, 2001
Title:	DEVICE FOR THE CONTROLLED INHALATION OF THERAPEUTIC AEROSOLS
Art Unit:	3731
Examiner:	Glenn K. Dawson
Confirmation Number:	7304
Attorney Docket No.:	RVOS-E1341US

HONORABLE COMMISSIONER OF PATENTS
Alexandria, VA 22313-1450

DECLARATION UNDER 37 CFR § 1.132

In response to the Office Action dated February 20, 2008, I, William C. Zimlich, Jr., do hereby declare and say as follows:

BACKGROUND INFORMATION

1. I am a co-inventor of U.S. Patent No. 6,269,810 (hereinafter referred to as "Brooker").

2. I graduated from Ohio State University in 1984 with a Bachelor of Science in Mechanical Engineering.

3. I am an inventor on multiple patents and patent applications in the area of pulmonary drug delivery, including U.S. Patent Nos. 6,269,810, 6,397,838, 6,796,303, and 6,805,118 and U.S. Patent Publication No. 2005/0236501.

4. Between 1984 and 1997, I held various positions at Chrysler Corporation, Cambridge Automation, Stratagene Cloning Systems, AMS Plastics, Inc. and Medex, Inc.

8/1/08

5. In 1997, I co-founded Battelle Pulmonary Therapeutics, Inc. (now Ventaira, Inc.), where I was Vice President responsible for research and development as well as manufacturing of electromechanical aerosol delivery devices.

6. I am currently employed at Activaero America, Inc., where I became CEO at its inception in February 2007.

THE APPLICATION

7. I have read and understood the above referenced patent application, including the specification, claims and the relevant prior art.

8. The standard I used for anticipation is whether every element of a claim is disclosed in a single prior art reference.

9. The standard I used for obviousness is whether the claims would have been obvious to an ordinary person skilled in the art in light of the references cited.

10. Brooker discloses a device developed to deliver chemotherapy to patients in a hospital setting. Brooker discusses a pulsed nebulizer. The nebulizer was pulsed to avoid extraneous and potentially dangerous aerosolized chemotherapy agents from escaping from the device and exposing the patient and the caregiver.

11. An air pulse time in seconds is set manually before the start of treatment. Then the patient takes a pre-set number of inhalations to receive the total drug treatment. The air pulse is not varied from patient to patient.

12. Brooker does not teach or suggest a variable inhalation volume or variable flow rate. The aerosol quantity (concentration) is set by the pulse time but the volume is fixed as the aerosol is flowed into a fixed plenum. The flow rate through the device is fixed also and Brooker does not disclose a variable flow rate.

13. Brooker does not adjust respiratory flow rate.

8/1/08

14. Instead, the only way to adjust breathing parameters at the time of Brooker was to try to teach patients to breathe correctly. For example, a respiratory therapist would always have his hand on the patient's back, to coach the patient to breathe correctly.

15. The concepts of controlling respiratory flow rate and tidal volume were not known at the time of Brooker. In addition, no one skilled in the art was aware of the concept of using controlled breathing via an external air source for a pulsed nebulizer system.

16. At the time, those skilled in the art were concerned with how much medicament was being delivered into the mouth, not where it went within the respiratory tract system. It was only possible to estimate total lung deposition with a very expensive scintigraphy procedure. In this procedure, the drug is radiolabelled, and then a gamma camera is used to estimate total lung deposition.

17. Therefore, Brooker does not disclose individually adjusting an inhalation device to the patient to be treated by adapting a dosage of at least one aerosol on the basis of the inhalation parameters, adjusting flow rate or tidal volume based on inhalation parameters, or controlling an air flow through an inhalation device using the inhalation device during the controlled inhalation.

18. Even well trained pulmonologists typically are not familiar with the scientific background of aerosol particle deposition within the lungs.

19. In addition, even after extensive breathing training, patients typically revert to a respiratory flow rate and tidal volume that are comfortable to them. In clinical trials with conventional inhalation devices, it was shown that the incorrect breathing pattern is one of the most important errors that is made during inhalation treatment. (Giraud et al. 2002, 19:246-251, European Respiratory Journal, copy attached).

20. The Giraud reference specifically states that misuse of pressurized metered-dose inhalers is mainly due to poor coordination (see Abstract).

21. Controlled aerosol delivery to the lungs can only be guaranteed when inhalation parameters are inputted into the inhalation device, as claimed in claims 25, 43 and 44.

8/1/08

CONCLUSION

Based on the above analysis, I conclude that the claims in the present patent application are not anticipated by or obvious over Brooker.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: August 1, 2008 By: William C. Zimlich, Jr.